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(71) Applicant: E.R. Squibb & Sons, Inc.  
Lawrenceville-Princeton Road  
Princeton, N.J. 08540-4000(US)

(72) Inventor: Plass, Ronald Andrew  
3 Croxton Lane  
Lindfield sussex(GB)  
Inventor: Steer, Graham Emery  
39 Rowallen Road  
Fulham London SW5 6A(GB)

(74) Representative: Cook, Anthony John et al  
D. YOUNG & CO. 10, Staple Inn  
London, WC1V 7RD(GB)

(54) Ostomy bag and gas filter for same.

(57) A gas filter arrangement in an ostomy bag having a filter pad with non-woven layers of plastics material on opposed surfaces of the pad, a molded filter case having a rim portion and a inwardly extended annular flanged portion and a layer of micro-perforated plastic film attached to the surface of the rim of the filter remote from the flange to maintain the filter pad within the rim and between the film and the flange is disclosed.

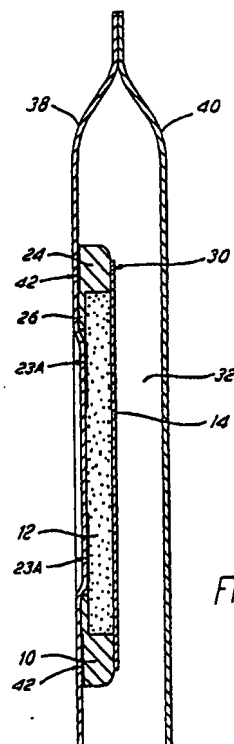


FIG. 2

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# OSTOMY BAG AND GAS FILTER FOR SAME

This invention relates to a gas filter arrangement in an ostomy bag, and to an ostomy bag including a filter.

There have been many attempts to include a gas vent and filter in an ostomy bag. Examples are described and illustrated in U.K. Patents Nos. 1,117,204; 1,379,464, 1,405,032; 1,462,492; 2,031,282; 2,083,760; 2,122,090; 2,150,029; 2,171,052; and 2,177,926.

U.K. Patent No. 2,059,797 lays stress on the desirability of avoiding gas bypassing the filter assembly. The construction illustrated in this patent involves provision of two separate heat seals (26, 27 in the patent Figure 2) and a further heat seal operation (28) to fix the filter assembly to the bag wall. Under present day conditions it is highly desirable to simplify design and manufacture, and the present invention was reached with this aim in mind. It has, moreover, been surprisingly found that a filter which tolerates some gas bypass is nevertheless effective and useful in filtering and deodorizing gases from an ostomy bag.

According to the present invention there is provided a gas filter arrangement comprising:  
a filter pad comprising open cell polyurethane foam loaded with activated carbon having microfine non-woven layers of plastics material on two opposed surfaces of the pad;  
a molded filter case comprising a rim portion and an inwardly extending annular flange portion, and a layer of microperforated plastic film attached to the surface of the rim of the filter remote from the flange so as to maintain the filter pad within the rim and between the said film and the flange.

Such a filter arrangement is preferably integrated into an ostomy bag by attaching a wall of the bag firstly to a region of the rim surface surrounding the flange by a heat seal or heat weld operation and secondly by attaching the bag wall to a film or layer on the filter pad, by means of a hot-melt adhesive matrix. At an appropriate location in the bag wall, a hole or slit (or several holes or slits) is provided to allow gas to escape to the ambient atmosphere. Though the words "firstly" or "secondly" have been used above, in the most preferred method of making a product according to this invention, the two aforesaid attachments are made substantially simultaneously in a single operation using a single hot platen.

An advantage of this procedure is that the filter arrangements can be stored in a magazine and can be fed to the appropriate location in a high speed machine. By a high speed machine is meant a machine capable of welding two sheets of film around their edges to produce an ostomy bag at a

rate of at least 2000 and preferably 4000 bags per hour.

Also, according to the invention there is provided a gas filter arrangement comprising a filter pad bearing activated carbon and having gas permeable layers of plastics film material on two opposed surfaces of the pad; a plastics molded aperture filter case which snugly receives but is not sealed, welded or otherwise attached to the filter pad, and a layer of gas permeable plastics film material attached to a rear peripheral annular surface of the filter case in such a way as to maintain the filter pad captive within the case.

The invention will be better understood from the following description of one example of filter arrangement and bag according to the invention, given with reference to the accompanying illustrative drawings in which:

FIG. 1 is a cross-sectional view of one example of filter disc according to the invention;

FIG. 2 is a vertical cross-section taken in an axial plane through the center of the filter and showing the upper portion of an ostomy bag; and

FIG. 3 is an exploded view showing the construction and manner of assembly of the filter arrangement with one of the bag walls.

In the drawings, like parts are represented by like reference numerals.

A preferred example of filter arrangement according to the invention includes three basic parts, namely a molded filter case 10 (FIG. 3), a filter pad or disc 12, and a microperforated weldable film 14.

The construction of the filter pad 12 is shown in more detail in FIG. 1. The preferred example of the filter pad is formed by a 2 millimeter thick body of carbon impregnated crushed polyurethane foam. The preferred shape for the filter pad is a thin disc but clearly is not essential to the invention that it should be circular nor of the specified thickness. Attached to the upper and lower surfaces of the disc by a matrix of adhesive known as "M-web adhesive" indicated by reference numerals 16 and 18 are a lower layer 20 of non-woven synthetic plastics material which is gas permeable and an upper layer 22 of microfine non-woven synthetic plastics material which is also gas permeable. One example of a suitable material for the layer 20 is that known as V115/463 supplied by Freudenberg U.K. and one example of a material suitable for the layer 22 is that known as "Lutrovil 708" also available from Freudenberg U.K. Layers 20, 22 are permeable to the passage of gas through the layer parallel to their surfaces as well as normal to their surfaces.

The molded filter case 10 is preferably an



annular piece of synthetic plastics material, e.g. ethylene vinyl acetate polymer, having a rim portion 24 and a flange portion 26. The flange 26 surrounds a hole 28. The internal diameter of the rim 24 is equal to or slightly greater than the external diameter of the filter pad 12, so that the filter pad fits snugly within the molded case 10. It is held therein by a microperforated weldable film 14 which is secured to the rear surface 30 of the rim 24 in any suitable manner, for example by heat welding or adhesive. The film 14 is, as stated, microperforated, and readily permits entry of gas from the interior 32 of the bag to the filter pad 12.

The filter arrangement so produced, consisting of the case 10, the pad 12 and the film 14, can readily be stored in a magazine and fed therefrom by suitable automatic means to a high speed production machine. In the preferred manner of manufacture for bags according to the invention, the filter arrangements are fed with the face of the flange 26 downwardly onto a sheet of bag film 38 (the presently preferred film being that known as MF bag film obtainable from W.R. Grace). The filter arrangements are fed so that the filter arrangement is substantially centralized over a cut or hole 36 in the bag film 38. In the illustrated embodiment, an S-shaped cut is shown but any other slit or hole or pattern of apertures allowing escape of gas would be suitable.

By application of a hot platen to the outer surface of the bag wall 38, the wall 38 is welded to the surface 42 (FIGS. 2 and 3) of the case 10 and due to the presence of the matrix of heat activated hot melt adhesive 23 on the surface of the layer 22, an annular region of this layer is adhesively secured to the rear surface of the bag wall 38. (See 23A, FIG. 2) In a central region of the layer 22, formed by annular region 23A, no adhesive join with the bag wall 38 is made in the area of the cut 36. For example, this area may be substantially one quarter of an inch (about 6 mm) in diameter. The lack of adhesive connection may be achieved, for example, by providing an appropriately located recess in the working surface of the hot platen, or, as illustrated in FIG. 1, by leaving the central region 25 without an adhesive layer.

As is conventional, a stomal orifice and a suitable means for securing the ostomy bag to the patient will be provided in one or other of the walls 38, 40 and, if desired, a bottom outlet opening to the bag can also be provided.

One advantage of the present invention is that the number of heat welding operations is reduced and hence manufacture is simplified, and, in addition, high speed manufacture can be employed in that filter arrangements according to the invention are particularly suited for rapid and automatic attachment to a film constituting a bag wall. Although

no special measures are taken to constrain the path of the gas through the filtering arrangement, satisfactory filter and deodorizing efficiency is obtained. In addition, the filter is light and overall thickness of the filter is small which means that it is not obtrusive when worn under light clothing.

## Claims

### 1. A gas filter arrangement comprising:

a filter pad comprising open cell polyurethane foam loaded with activated carbon having microfine non-woven layers of plastics material on two opposed surfaces of the pad;

a molded filter case comprising a rim portion and an inwardly extending annular flanged portion, and a layer of microperforated plastics film attached to the surface of the rim of the filter remote from the flange so as to maintain the filter pad within the rim and between the said film and the flange.

2. An ostomy bag including a filter arrangement according to Claim 1 which is integrated into an ostomy bag by attaching a wall of the bag to a region of the rim surface surrounding the flange by heat seal or heat weld operation and by attaching the bag wall to a film or layer on the filter pad, by means of a hot-melt adhesive matrix.

3. An ostomy bag according to Claim 2 in which the two aforesaid attachments are made substantially simultaneously in a single operation using a single hot platen.

4. A method of making ostomy bags according to Claim 2 or 3 in which the filter arrangements are stored in a magazine and are fed to the appropriate location in a high speed ostomy bag manufacturing machine.

5. A gas filter arrangement comprising a filter pad bearing activated carbon and having gas permeable layers of plastics film material on two opposed surfaces of the pad; a plastics molded aperture filter case which snugly receives but is not sealed, welded or otherwise attached to the filter pad, and a layer of gas permeable plastics film material attached to a rear peripheral annular surface of the filter case in such a way as to maintain the filter pad captive within the filter case.



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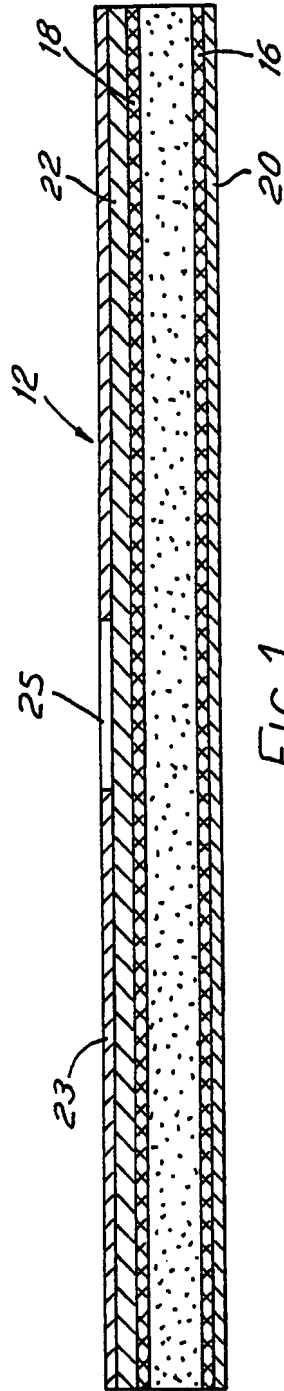


FIG. 1

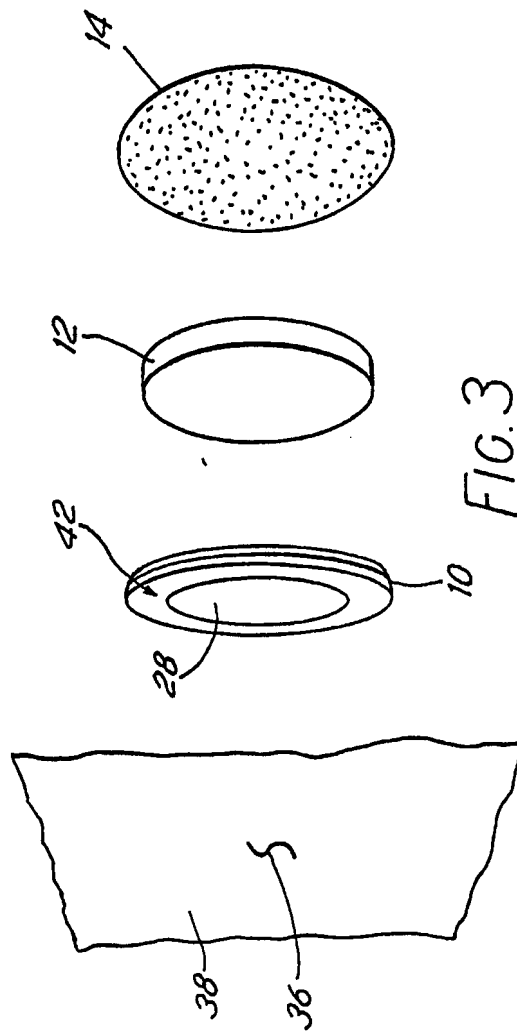


FIG. 3





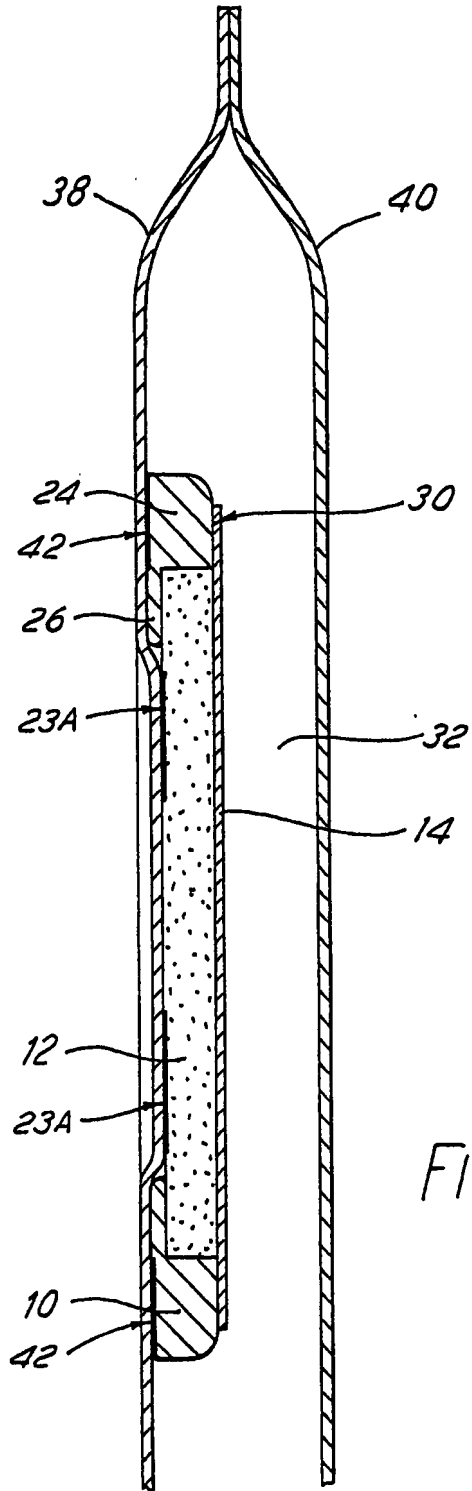
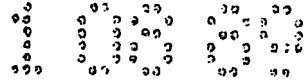


FIG. 2

